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(71) Applicant (for all designated States except US): **BURLEY APPLIANCES LIMITED [GB/GB]**; Pillings Road, Oakham, Rutland LE15 6QF (GB).

(72) Inventor; and

(75) Inventor/Applicant (for US only): **BRISTOW, Gary [GB/GB]**; 26 Thornbrook Way, Ettiley Heath, Sandbach, Cheshire CW11 3ZB (GB).

(74) Agent: **FORRESTER KETLEY & CO.**; Chamberlain House, Paradise Place, Birmingham B3 3HP (GB).

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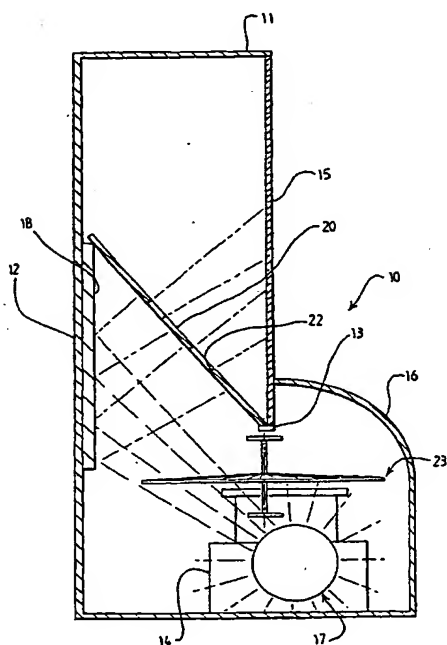
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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: **APPARATUS FOR SIMULATING FLAMES, AND A SOLID FUEL EFFECT FIRE**

(57) Abstract: Apparatus for simulating flames comprising a housing, a light source, a reflector, a rotating member located optically between the light source and the reflector, and a translucent screen onto which light is reflected from the source, wherein there is interposed optically between the reflector and the screen a flame effect member provided with apertures through which the light passes from the reflector to the screen.



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Title: Apparatus for Simulating Flames, and a Solid Fuel Effect Fire.

Description of Invention

This invention relates to apparatus for simulating flames, and particularly but not exclusively to apparatus for simulating flames in a solid fuel effect fire, to give the impression of flames emanating from combusting fuel. The invention also relates to a solid fuel effect fire.

Several arrangements have hitherto been used to simulate flames in such fires, the most common of which in recent years utilising a plurality of reflective ribbons or strips suspended towards a rear part of the fire, a light source located forwardly of the ribbons or strips, and a translucent screen also located forwardly of the ribbons or strips such that light from the light source reflected from the ribbons or strips is incident on a rear surface of the screen, giving a flame effect when the screen is viewed from the front.

To give the impression of flames, the ribbons or strips are generally moveable, such as by a current of air produced from a fan located within the body of the fire, and may additionally or alternatively be coloured or shaped so as to improve the flame effect produced.

A difficulty which is encountered is that flame effect systems of the kind set out above require the use of a fan, which can be undesirably noisy, and which adds to the expense of the installation.

Conventional flame effect means which do not incorporate fans have involved the use of a "spinner", which rotates under the effect of heat produced (e.g.) by the light source, but flame effect means based wholly on the rotation of a spinner have been singularly lacking in realism.

It is one of the various objects of this invention to provide apparatus for simulating flames, which is simple in its construction and inexpensive in its manufacture.

According to one aspect of the present invention there is provided apparatus for simulating flames comprising a housing, a light source, a reflector, a rotating member located optically between the light source and the reflector, and a translucent screen onto which light is reflected from the source, wherein there is interposed optically between the reflector and the screen a flame effect member provided with apertures through which the light passes from the reflector to the screen.

The light source may be located in a lower part of the housing.

The flame effect member is advantageously provided with flame-shaped apertures or openings.

The rotating member may comprise a spinner. By virtue of the rotation of the spinner, fans of illumination are transmitted from the reflector which sweep slowly over the flame effect member, producing a realistic flame effect on the screen.

The flame effect member may be provided by a semi-rigid sheet, made from a cardboard or plastics material, the sheet being provided with the cut-out apertures or openings.

Conveniently the flame effect member is inclined, an upper part of the flame effect member preferably being in contact with the reflector at an upper part thereof.

The reflector may be provided with surface effects to break up the light reflected therefrom, or may be in the form of a sheet of foil, preferably coloured to impart to the light reflected therefrom an appropriate colouring.

According to a second aspect of the present invention, there is provided a solid fuel effect fire having a housing and apparatus for simulating flames located within the housing, the apparatus for simulating flames comprising a

light source, a reflector, a rotating member located optically between the light source and the reflector, and a translucent screen onto which light is reflected from the source, wherein there is interposed optically between the reflector and the screen a flame effect member provided with apertures through which the light passes from the reflector to the screen.

The invention, in its second aspect, may comprise one or more of the features described herein.

There will now be given a detailed description, to be read with reference to the accompanying drawing, of an apparatus for simulating flames which is a preferred embodiment of this invention, the embodiment having been selected for the purposes of illustrating the invention by way of example only.

In the accompanying schematic drawing:

Figure 1 is a schematic view of the preferred embodiment; and

Figure 2 is a schematic perspective view, from the front and one side, of the preferred embodiment.

The invention is embodied and will be described hereinafter in a solid fuel effect fire generally indicated at 10 comprising a body 11 having a rear wall 12, and side walls (not shown), and optionally a space heating element (also not shown). In conventional manner the fire comprises a translucent plastics screen 15, which in this example provides a front wall of the fire.

Towards a lower part of the fire there is provided a forwardly extending section generally indicated at 16, on which may be provided imitation logs, coal or the like.

Located within the section 16 is a housing 14 for a light source 17, which may project light through the imitation logs or coals, conveniently via the intermediary of coloured filters or the like. This enables so-called "white" lamps to be used.

Mounted on the housing 14, conveniently supported between a pair of arms 25 above and slightly to the rear of the light source 17, is a spinner 23,

having a plurality of curved (generally crescent-like) openings surrounded by inclined vanes, whereby the spinner is caused slowly to rotate by the heat rising from the light source, whilst beams of light are allowed to pass through the openings onto a reflector 18 provided on the rear wall 12 of the fire.

Conveniently the reflector is provided by a sheet of foil secured to the rear wall of the housing such as by adhesive.

Mounted between the reflector 18 and the screen 15 is a flame effect member 20, in the form of a semi-rigid sheet of plastics provided with openings 22 emanating from a central region thereof, in the form of stylised flames. Conveniently the flame effect member is generally opaque, preferably a dark grey in colour, other than where the openings 22 are provided.

Conveniently the flame effect member 20 is located on a flange 13 extending widthwise of the housing 11 at the lower edge of the screen 15, and is inclined, and engages an upper part of the reflector 18, so as to prevent leakage of light therebetween.

During use of the solid fuel effect fire which is the preferred embodiment of this invention, light from the source 17 is transmitted through the rotating spinner onto the rear reflector, and from there passes through the openings of the flame effect member 20 onto the translucent screen 15. The light which passes onto the reflector is in the form of beams which sweep across the reflector from one side to the other in an arcuate motion, resulting in the transmission of light through and across the openings 22 of the flame effect member 20.

As the bands of light sweep across the flame effect member 20, illumination in the form of flames is created on the screen 15. In between the bands of light, when no illumination is passing through a particular point, the edges of the cut-outs 22 cannot readily be seen, and the flames which are created by the use of the cut-outs are not seen as fixed, but as mobile flames.

In the present specification "comprise" means "includes or consists of" and "comprising" means "including or consisting of".

The features disclosed in the foregoing description, or the following claims, or the accompanying drawings, expressed in their specific forms or in terms of a means for performing the disclosed function, or a method or process for attaining the disclosed result, as appropriate, may, separately, or in any combination of such features, be utilised for realising the invention in diverse forms thereof.

CLAIMS

1 Apparatus for simulating flames comprising a housing, a light source, a reflector, a rotating member located optically between the light source and the reflector, and a translucent screen onto which light is reflected from the source, wherein there is interposed optically between the reflector and the screen a flame effect member provided with apertures through which the light passes from the reflector to the screen.

2 Apparatus according to claim 1 wherein the flame effect member is provided with flame-shaped apertures or openings.

3 Apparatus according to claim 1 or claim 2 wherein the rotating member comprises a spinner.

4 Apparatus according to any one of the preceding claims wherein the flame effect member is provided by a semi-rigid sheet.

5 Apparatus according to any one of the preceding claims wherein the flame effect member is inclined.

6 Apparatus according to claim 5 wherein an upper part of the flame effect member is in contact with the reflector at an upper part thereof.

7 Apparatus according to any one of the preceding claims wherein the reflector is provided with surface effects or irregularities which are effective to break up the light reflected therefrom.

8 Apparatus according to any one of the preceding claims wherein the reflector is provided by a sheet of foil.

9 Apparatus according to any one of claims 3 to 8 wherein the rotating member comprises a plurality of generally crescent-like openings.

10 A solid fuel effect fire having a housing and apparatus for simulating flames located within the housing, the apparatus for simulating flames comprising a light source, a reflector, a rotating member located optically between the light source and the reflector, and a translucent screen onto which light is reflected from the source, wherein there is interposed optically between the reflector and the screen a flame effect member provided with apertures through which the light passes from the reflector to the screen.

11 A solid fuel effect fire having one or more of the features set out in any one of claims 2 to 9.

12 Apparatus for simulating flames substantially as hereinbefore described and/or as shown in the accompanying drawing.

13 A solid fuel effect fire substantially as hereinbefore described and/or as shown in the accompanying drawing.

14 Any novel feature or novel combination of features described herein and/or in the accompanying drawings.

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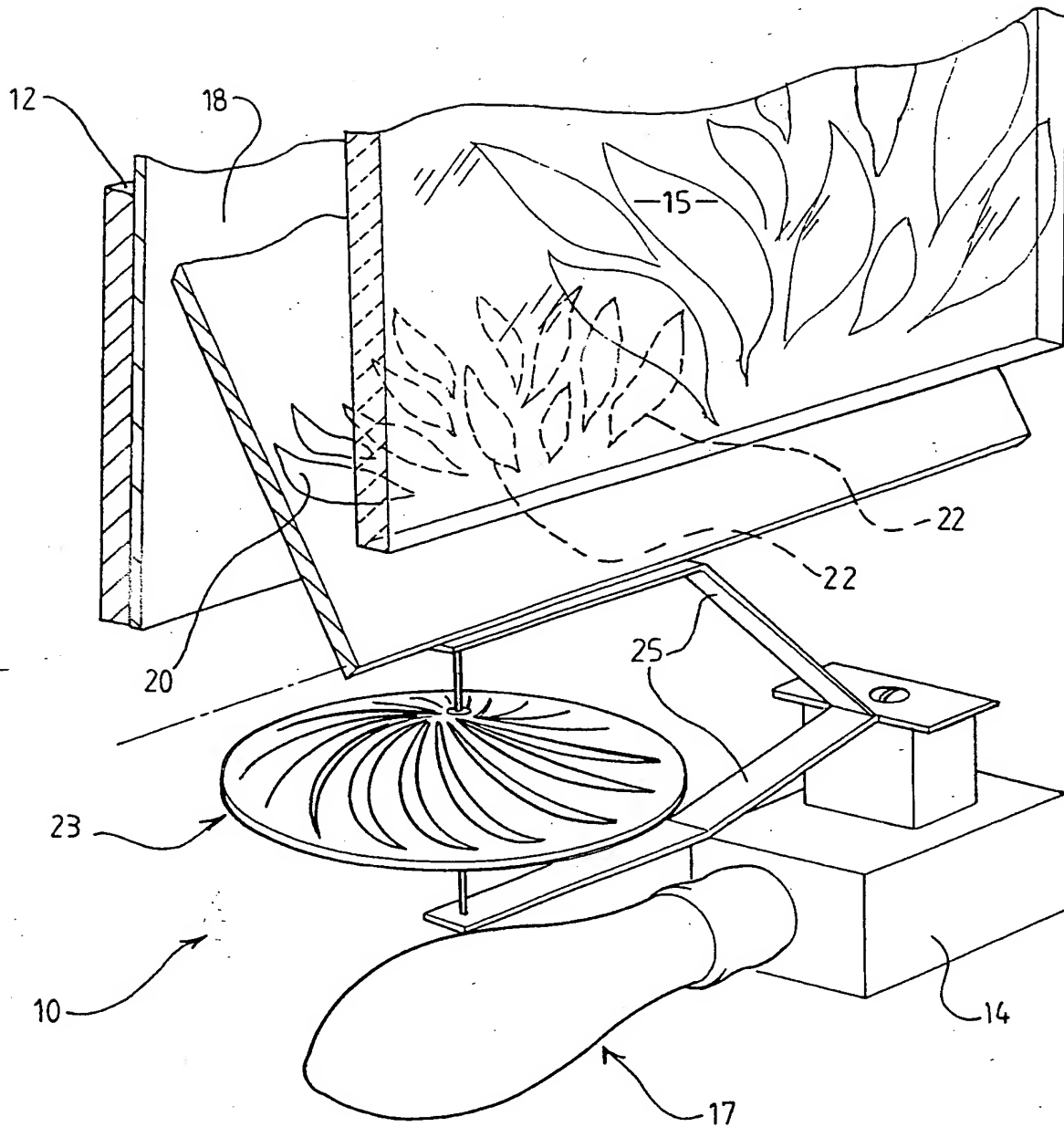


FIG 2

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INTERNATIONAL SEARCH REPORT

Internati Application No

PCT/GB 00/02647

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 F24C7/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 F24C F21P

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	GB 2 321 700 A (MCPHERSON ROBERT) 5 August 1998 (1998-08-05) the whole document	1-3, 5, 10, 11
A	WO 97 41393 A (DIMPLEX NORTH AMERICA LIMITED ; HESS KRISTOFFER (CA); MACPHERSON DA) 6 November 1997 (1997-11-06) page 10, line 8 - line 24; figures 1-5	1-3
A	GB 2 325 733 A (BURLEY APPLIANCES LTD) 2 December 1998 (1998-12-02) abstract	1

☐ Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

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Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Vanheusden, J

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

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